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VET efficacy: evaluation of factors in the workplace training

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Abstract

Training in the workplace is a key part of VET studies because allows students to develop their skills in a work setting, and gives important information about how well VET studies prepare skilled workers. However, there is little information about factors that influence the efficacy of training in the workplace. Our aim is to evaluate the efficacy of training in the workplace, through the factors that influence training efficacy. We applied a questionnaire of 57 items (5-point Likert scale), a sample of 1,026 VET students in the area of Barcelona, Spain. The results show that the factor "integration into the workplace" is rated more positively by the VET students (4.19), and the factors "social attitudes" and "individual attitudes" get a low score (3.30 and 2.93, respectively). The study allows the introduction of improvements and changes in these practices in order to improve the quality of VET.

Keywords: training in the workplace, VET, factors, efficacy, internship, training into the workplace

1. Introduction

Training in the workplace [TIW] is part of the curriculum of professional training in Spain, and it consists of developing non-contractual and measurable professional practices in companies and entities. These practices allow the student to know the world of work and, in particular, the company where the TIW is developed. They also allow to complete the technical training of students and adapting it to a specific job. And, last but not least, they allow to develop the student's professional skills and acquiring new ones.

In continuing education, effective training refers not only to the learning of employees but also to the application of this learning to the workplace, i.e., it refers to transfer of training. According to Baldwin and Ford (1988) [1], the transfer is "the degree to which participants have applied the knowledge, skills, and attitudes acquired in a context of training for work". Transfer is a key element of training efficacy and therefore it needs to be evaluated. Now, an exhaustive process of evaluation of transfer requires many human and financial resources. For this reason, several authors suggest the possibility of evaluating transfer indirectly by measuring the factors that influence the applicability of training to the workplace. Among the models of transfer factors with the greatest impact in the field of research are those of Baldwin & Ford (1988) [2], Noe (1986) [3], Rouiller & Goldstein (1993) [4], Thayer & Teachout (1995) [5], Holton (1996 [6], 2005 [7]), Burke & Hutchins (2008) [8], and Pineda, Moreno & Quesada (2010) [9].

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However, there is little scientific literature on factor models of TIW. To meet this need, our study focused on evaluating the efficacy of the TIW of the professional training by using the efficacy variables of the continuing education. The methodological approach was mixed, non-simultaneous, combining quantitative and qualitative data collection and quantitative and qualitative data analyses. Due to space limitations of this paper, we present partial results corresponding to the quantitative fieldwork. The aim is to present the quantitative results of the study on the evaluation of the efficacy of the TIW of vocational education and training [VET] in Barcelona from the measurement of the factors that facilitate and hinder its efficacy.

We started from a definition of effective TIW based on a dual purpose: (1) that professional training students implement in the training institution everything that they have learned during training, and (2) that they have a formative experience in the workplace in a sector related to the training they carried out. Therefore, we believe that an effective TIW allows the students:

- To complement the skills or knowledge acquired in VET developed within the institution.
- To apply their professional skills to a real work situation.
- To acquire attitudes and skills necessary for labor insertion.

In a first phase, we analyzed the qualitative data obtained from a theoretical review of scientific literature on TIW, in order to indicate the possible factors that influence its efficacy. In a second phase, continuing with qualitative data collection to identify factors of efficacy, we conducted 12 interviews with various key stakeholders. The analysis of the results from the theoretical review and interviews allowed the elaboration of the FET-TIW (Factors to Evaluate Transfer) questionnaire for students, an instrument designed to diagnose the efficacy of TIW. Then, we began the third phase with a quantitative methodological approach. The FET-TIW questionnaire was applied to 1,026 students who had developed the TIW during the current course. Subsequently, data were statistically analyzed.

With the three phases mentioned above and by triangulating methodologies and informants, we obtained a broad view of the subject matter, and we could compare the obtained data.

2. Methodology

We selected a sample of 1,026 students of VET in the Barcelona area, with a margin of error of 2.52% ($Z_a^2 = 1.96$). Given that we wanted to do a specific analysis by type of professional area associated with the degree of professional training, we conducted a stratified probability sampling with 5 professional areas: administration and management ($n = 144$), electricity and electronics ($n = 230$), mechanical manufacturing ($n = 108$), socio-cultural and community services ($n = 404$), and hotel business and tourism ($n = 140$). Students who participated in the study were enrolled in the TIW at the time of completing the questionnaire or had already taken the TIW during that academic course (2010-2011).

We created a questionnaire for evaluating the efficacy of TIW from the perceptions of students, the FET-TIW. It consisted of 71 items: 21 on the student profile, 8 on the reasons for selecting the company where they did the practices, 12 on students' attitudes, and 45 on variables influencing the efficacy of TIW. Items on the student profile and items on the selection of the company were of multiple-choice type. Attitudes were assessed using an Osgood's semantic differential scale of 5 points (1 = positive, 5 = negative). The efficacy variables were assessed with a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

To analyze the data, we used the SPSS statistical software. First, we conducted a construct validation through an exploratory factor analysis of 12 variables of attitudes, on the one hand, and the remaining 45 variables that influence the efficacy of TIW, on the other. These analyzes were done separately, since the assessment scales of the items were different. Second, we conducted descriptive and multivariate analysis.

3. Results

We conducted a construct validation using the technique of exploratory factor analysis. The variable “efficacy” (and the 4 items that compose it) was excluded from the factor analysis because it was considered a result and, therefore, it was a dependent scale.

The method followed was that of Maximum Likelihood, starting the analysis with an oblique Promax factor rotation, an Eigen value greater than unity, and setting the minimum value of the coefficient to 0.30. From the analysis of the 12 items on attitudes, 2 factors emerged with an explained variance of 54.83%: the factor “social attitudes” (8 items) and the factor “individual attitudes” (4 items). From the analysis of the 41 items related to the efficacy of TIW, 6 factors emerged with an explained variance of 48.14%, with 8 items removed during the process. Emerged factors were: “high-school tutor’s role” (7 items), “coherence of the high-school-company training” (9 items), “company tutor’s role” (6 items), “motivations” (4 items), “possibilities of developing TIW” (3 items), and “integration into the workplace” (4 items).

Second, we did an analysis of the reliability of the emerging factors and of the dependent variable “efficacy”, treating them as independent scales. We conducted a Cronbach’s alpha, whose results are shown in Table 1.

Table 1. Reliability of the scales

Scale	Valid cases	Cronbach’s alpha value
Social attitudes	1124	0.898
Individual attitudes	1135	0.822
High-school tutor’s role	1112	0.889
Coherence of the high-school-company training	1121	0.841
Company tutor’s role	1126	0.849
Motivations	1119	0.769
Possibilities for developing TIW	1128	0.476
Integration into the workplace	1127	0.790
TIW’s efficacy	1127	0.792

We considered almost all those coefficients that proved satisfactory, following the criteria of Nunally (1978) [10], in which a scale is reliable by itself when it has an alpha value greater than 0.7. However, the factor “possibilities for developing TIW” did not show a good reliability, possibly because it only consisted of three items.

Third, we analyzed the profile of TIW’s students who had completed the questionnaire. Table 2 presents the distribution of the surveyed students according to some profile variables.

Table 2. Profile of the students in the study

Profile variables	Students’ distribution according to their responses
Sex	<ul style="list-style-type: none"> Men: 540 (47,5%) Women: 597 (52,5%)
Age	<ul style="list-style-type: none"> <19 years: 394 (34,7%) 19-20 years: 229 (20,2%) 20 a 22 years: 306 (27%) >22 years: 205 (18,1%)
Work experience in months	<ul style="list-style-type: none"> 0 months: 468 (41,5%) 0-3 months: 129 (11,4%) 3-12 months: 251 (22,2%) >12 months: 281 (24,9%)
Number of	<ul style="list-style-type: none"> <10 employees: 373 (32,9%)

employees of the company where practices take place	<ul style="list-style-type: none"> • 10-49 employees: 431 (38%) • 50-250 employees: 149 (13,1%) • >250 employees: 64 (5,6%) • I don't know: 118 (10,4%)
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Of the sample of students, just over half (58.2%) were enrolled at the time of the TIW, a fifth (20.8%) had changed company during that training cycle, 19.8% had done the TIW in a training cycle different from the current one, and 3.8% had repeated the TIW in that same cycle. About 60% of students in the sample considered that coordination between the institute tutors and those of the company during the TIW was little or none.

Likewise, 51.1% of students failed to choose the training center, that is, they were assigned. For those who were able to choose the company of practices, the most prominent reason was the proximity of the center (17.5%). Regarding the academic profile of the students, 71% had not suspended any subject during the training cycle. 63.6% of students were academically above average in their class, specifically, 41.1% of students had an average of 1 approved academic record, and 48.7% had an average grade of “B”.

We analyzed the factors with an average of less than 2 points (on a scale of 5) that could be considered as barriers to the efficacy of TIW, factors that could become barriers (values between 2 and 3), weak facilitators of efficacy (between 3 and 4 points), or strong facilitators (average over 4 points). The role of each factor is shown in the following figure.

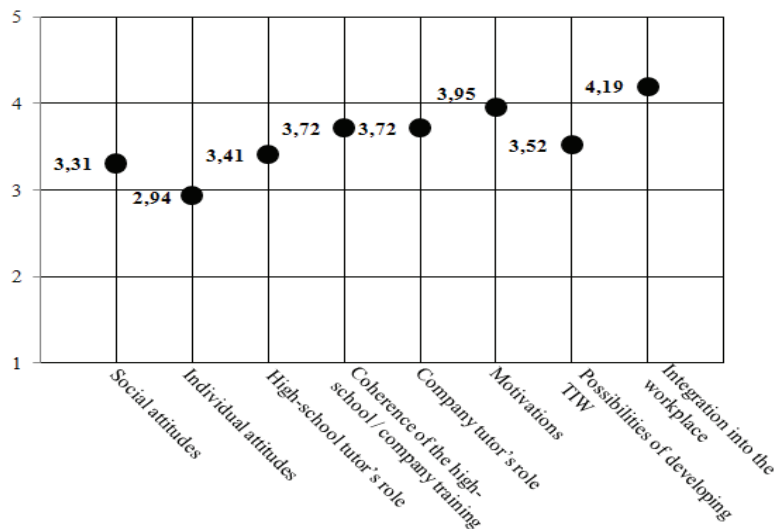


Figure 1. Factors influencing TIW's efficacy

As shown in Figure 1, the factor “individual attitudes” has the lowest value of the set, with a mean of 2.94 out of 5. Although it is not a barrier in itself, we believe that, if we do not intervene, it may become a barrier to the efficacy of the TIW. On the other hand, the factor “integration into the workplace” received higher scores, acting as a strong facilitator of the efficacy of TIW with a means of 4.19 points. The remaining factors, with values between 3 and 4 points, reported the need to be driven in order to improve the efficacy of the TIW.

Finally, we analyzed the efficacy of TIW, and obtained a means of 3.77 (on a scale of 1 to 5). This fact allows us to assert that the students of Barcelona's TIW believe that the practices that have taken place in the context of their vocational studies is quite good, since the score is medium-high.

4. Conclusions

The efficacy of training in the workplace for students in VET is a crucial element in determining the quality of training as well as the results of public and private investment at this level. Our study allowed us to empirically identify the factors that influence the efficacy of TIW. These factors are: school tutor's role, the consistency of training at the school, company tutor's role, students' motivations, integration into the workplace, and the possibility of developing TIW (although this factor had little reliability).

Identifying these factors is an important contribution to scientific knowledge, since for the first time factors that must be taken into account for the TIW to be effective were detected. Therefore, based on our results, we can say that the TIW is effective, i.e. it will generate learning and its application to the place of practice, if students are motivated, if they are integrated into the company, if the school tutor and that of the company are involved, and if there is coherence in the training that both propose. These elements give an important guidance to the various actors involved in the TIW on the factors that must be taken into account to ensure an effective training.

The identification of the factors of efficacy of the TIW has allowed us to create and validate an instrument for measuring them, i.e., the FET-TIW questionnaire. This instrument allows to diagnose the position of the factors that determine the efficacy of TIW. Also, it allows us to propose improvements. Our results show that the factor "individual attitudes" of students who score low is the main barrier to effective training. Thus, these attitudes should be improved, since they are necessary for good learning and application of the TIW. On the other hand, students are highly integrated into companies, acting as a powerful facilitator of efficacy. In addition, students are also motivated regarding TIW. This fact, as shown by several authors (Noe, 1986 [11], Thayer & Teachout, 1995 [12] Burke & Hutchins, 2008 [13]), is very important for the efficacy of training. Since these two factors are strong points of efficacy, educational agents should take them as a starting point to strengthen the other factors.

These results show that the FET-TIW may be a useful tool for schools, education authorities, and companies that host trainees, since it can improve the organization and management of the TIW and thereby increase the efficacy, which is of benefit to the entire society. From here, we encourage you to use it.

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